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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,258	12/01/2003	Shiro Tsunai	A427-1	1724

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EXAMINER
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WYATT, KEVIN S

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/724,258

Applicant(s)

TSUNAI, SHIRO

Examiner

Kevin Wyatt

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-17 is/are allowed.
- 6) ☒ Claim(s) 1, 4 and 8 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5-7, 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0405.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,4, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Oozu (U.S. Patent No. 5,801,373).

Regarding claim 1, Oozu shows in Figs. 37-38 a CCD image sensor comprising (a) at least four charge transfer devices each, transferring signal charges in a column direction (IR-CCD1-2, RCCD1-2, GCCD1-2, and BCCD1-2); (b) a charge-detecting capacitor receiving signal charges at different timings from one another from said charge transfer devices through an output gate to which said charge transfer devices are connected (col. 16, lines 27-30); and (c) a charge-detector detecting signal charges stored in said charge-detecting capacitor (col. 16, lines 27-32).

Regarding claim 4, Oozu shows in Fig. 38 comprising a diode row extending between charge transfer devices (upper and lower CCD registers, col. 16, lines 51-55) located adjacent to each other, said diode row including a first group of photodiodes supplying signal charges to one of said charge transfer devices and a second group of photodiodes supplying signal charges to the other of said charge transfer devices, photodiodes belonging to said first group and photodiodes belonging to said second group being alternately arranged.

Regarding claim 8, Oozu shows in Figs. 37-38 a CCD image sensor comprising:

(a) first, second and third charge transfer devices (upper and lower CCD registers, col. 16, lines 51-55) each transferring signal charges in a column direction; (b) a first diode row extending between said first and second charge transfer devices, said first diode row including a first group of photodiodes supplying signal charges to said first charge transfer device and a second group of photodiodes supplying signal charges to said second charge transfer device wherein photodiodes belonging to said first group and photodiodes belonging to said second group are alternately arranged (upper and lower CCD registers respectively store odd and even signals, col. 16, lines 52-53); (c) a second diode row extending between said second and third charge transfer devices, said second diode row including a third group of photodiodes supplying signal charges to said second charge transfer device and a fourth group of photodiodes supplying signal charges to said third charge transfer device wherein photodiodes belonging to said third group and photodiodes belonging to said fourth group are alternately arranged (upper and lower CCD registers respectively store odd and even signals, col. 16, lines 52-53); (d) a charge-detecting capacitor receiving signal charges at different timings from one another from said first to third charge transfer devices through an output gate to which said first to third charge transfer devices are connected (col. 16, lines 27-30); and (e) a charge-detector detecting signal charges stored in said charge-detecting capacitor (col. 16, lines 27-32).

***Allowable Subject Matter***

3. Claims 11-17 are allowed.
4. Claims 2-3, 5-7, and 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
3. The following is a statement of reasons for the indication of allowable subject matter:

Claims 2 and 9 are allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor, comprising, in addition to the other recited features of the claim, an output gate comprised of gate electrodes in three stages, arranged in a direction in which said signal charges are transferred.

Claim 3 and 10 are allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor comprising, in addition to the other recited features of the claim, a middle-stage gate electrode has a projection projecting towards an initial-stage gate electrode.

Claim 5 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor, comprising, in addition to the other recited features of the claim, a first diode row extending between a pair of charge transfer devices and a second diode row extending between another pair of charge transfer devices are arranged at pitches different from each other.

Claim 6 is allowable because the prior art fails to disclose or make obvious,

either singly or in combination, a CCD image sensor , comprising, in addition to the other recited features of the claim, a first diode row and a second diode row of photodiodes staggered by a half pitch.

Claim 7 is allowable because the prior art fails to disclose or make obvious, either singly or in combination, a CCD image sensor, comprising, in addition to the other recited features of the claim, two diode rows extending between a pair of charge transfer devices and two diode rows extending between another pair of charge transfer devices are arranged at pitches different from each other.

4. The following is an examiner's statement of reasons for allowance:

Regarding claim 11, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, "photodiodes in said second diode row being staggered by a half pitch relative to photodiodes in said first diode row."

Regarding claim 12, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, "c) third and fourth diode rows photodiodes wherein, said third row being staggered by a quarter pitch relative to photodiodes in said first diode row; and d) photodiodes in said fourth diode row being staggered by a quarter pitch relative to photodiodes in said second diode row."

Regarding claim 13, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, "a third diode row extending in parallel with said first and second diode rows photodiodes wherein,

said third row being arranged at a pitch twice greater than a pitch at which photodiodes in said first and second rows are arranged.”

Regarding claim 15, the prior art fails to disclose or make obvious a ccd image sensor comprising, in addition to the other recited limitations of the claim, “a second- or later-stage gate electrode having a projection projecting towards the previous-stage gate electrode.”

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Furumiya (U.S. Patent No. 6,333,525 B1) discloses a charge transfer apparatus and manufacture method thereof.

Futamura (Publication No. U.S. 2003/0209744 A1) discloses a solid state image sensor.

Kimura (U.S. Patent No. 5,767,901) discloses a color linear image sensor.

Miura (U.S. Patent No. 5,379,067) discloses a ccd linear sensor and method of read-out charges therefrom.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Wyatt whose telephone number is (571)-272-5974. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K.W.

  
Georgia Epps  
Supervisory Patent Examiner  
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